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ABSTRACT

During Phase I of an Allied Health Professions Basic Improvement Grant, a five-member committee developed a curriculum for a medical laboratory technology program at Miami-Dade Junior College by: (1) defining competencies which differentiate a certified laboratory assistant from a medical laboratory technician, (2) translating expected laboratory performances for assistants into a suggested format for presentation in a college setting, (3) outlining the technical portion an associate degree program, (4) suggesting alternatives within the general education and natural science block required by the college, and (5) evaluating and making recommendations for facilities, equipment, and audio-visual holdings. The proposed program utilizes the module or block concept and provides an integration of practicum with didactic activity at the beginning of the student's course of study, which continues throughout the entire program. Included in this report are: (1) suggested courses for a 5-term program (70 weeks), (2) proposals for eight new block courses covering such topics as clinical hematology, instrumentation, clinical chemistry, clinical microbiology, and clinical practicum, and (3) a suggested format for evaluating the program, which provides for input from faculty, clinical supervisors, students, employers, and the community. (SB)

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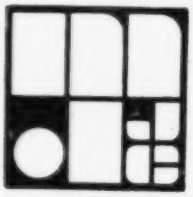
FINAL REPORT
OF THE
CURRICULUM DEVELOPMENT PROJECT
FOR THE
MEDICAL LABORATORY
TECHNOLOGY PROGRAM
AT
MIAMI-DADE JUNIOR COLLEGE
MIAMI, FLORIDA



ALLIED HEALTH PROFESSIONS BASIC IMPROVEMENT GRANT
PHASE I
CPN 7-69

ATI-AS-03

April 13, 1971

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TECHNOLOGY PROGRAM

AT

MIAMI-DADE JUNIOR COLLEGE

MIAMI, FLORIDA

April 13, 1971

ACKNOWLEDGMENTS

The Division of Allied Health Studies recognizes the outstanding contribution to the improvement of education for Medical Laboratory Technicians summarized in this report. In addition to the efforts reflected in the suggested curriculum, the faculty and staff of the Division appreciate the work which the Curriculum Committee completed on behalf of the students in the present program. For example, clinical programs for 27 students were arranged on an emergency basis in December 1970. These clinical programs included setting of objectives, completing planning visits to the clinical facilities, and assisting the College staff with follow-up supervision. Also, individualized programs for Certified Laboratory Assistants who entered Miami-Dade in 1970 were developed so that these students have the option for graduation in 1971. This detailed work for the present relates directly to solving many aspects of planning for implementation of the revised program in the fall term 1971.

The project is phase one of Allied Health Professions Educational Improvement Grant Number 1 E01 AH 00104.01, CPN 7-69. Completion of this phase was made possible by the following individuals and agencies:

1. The Curriculum Committee:

Dr. Jerome Benson	Mrs. Martha Skogland
Dr. David S. Lindberg	Miss Ruth Williams
Mrs. Janet L. Rodeheaver	

2. The Evaluation Committee, guests, and representatives of the Florida Department of Education who reviewed the summary on March 13, 1971:

Miss Mary S. Breen	Dr. Kenneth Penrod
Dr. Robert W. Coon	Mrs. Mary Resh
Mrs. Sarah C. Hurst	Dr. W. B. Stewart
Dr. Robert L. Love	Dr. George P. Vennart
Mr. Arch Lugenbeel	Dr. Vandon E. White

Dr. Darrel J. Mase spent March 8, 1971, with the Division and considered the MLT and other programs in Allied Health.

Invitations were issued to Dr. Kenneth G. Skaggs and Dr. Colin R. MacPherson but they were unable to attend although they did submit suggestions by mail.

3. The Administration and Staff in clinical facilities:

Cedars of Lebanon Hospital	North Miami General Hospital
Doctors Hospital	Pan American Hospital
Hialeah Hospital	St. Francis Hospital
Mercy Hospital	South Miami General Hospital
Miami Heart Institute	Variety Children's Hospital
Mount Sinai Hospital	

4. Our colleagues at Miami-Dade Junior College:

Dean Ronald Connelly	Dr. Gene Mock
Mr. Robert H. Drobner	Mr. Lewis D. Ober
Dr. M. Duane Hansen	Dr. Adrian Poitras
Mr. Theodore A. Koschler	

5. Our colleagues within the Division:

Dr. J. Walter Beck	Mr. Myrnard J. Martinez
Dr. George T. Lewis	Mr. Harold J. Zabsky

Miss Cynthia A. Arnold
Mrs. Lois F. Hilton

The planning for Miami-Dade Junior College is shared with the anticipation that portions of the program content may be helpful to other community-junior colleges in their planning. More detailed unit outlines and performance expectations in the clinical agency are understandably lengthy, but can be available on a selective basis within one year. The Division welcomes visitors; and exchange visits may be the most appropriate method for reviewing the program beginning in the 1971-72 academic year.

Elizabeth J. Lundgren, Director
Division of Allied Health Studies

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GENERAL INFORMATION

A. MIAMI-DADE JUNIOR COLLEGE

1. History

The need for placing higher education within the geographical and financial reach of a greater number of Florida's citizens led the 1955 State Legislature to establish a Community College Council to recommend long-range plans for the development of a system of junior colleges in Florida. After studying the State's needs in the area of higher education, the Council recommended that five community junior colleges be established as soon as possible, with others to be constructed later when funds were available. Dade County was one of the areas designated by the Council for the immediate development of a junior college. Activated by the Dade County Board of Public Instruction in 1959, the Dade County Junior College began instruction on September 6, 1960 as a coeducational, public, two-year college supported jointly by the State of Florida and Dade County. By action of the Board in February, 1963 the college name was changed to Miami-Dade Junior College. By action of the Florida Legislature, effective July, 1968 junior college districts have been created as independent, separate, legal entities for the operation of community junior colleges. Under the new organizational format, Miami-Dade's Advisory Committee has become the District Board of Trustees, working directly with the President in all matters pertaining to the governance and operation of the College.

2. Growth and Development

The 1,400 students who registered during the first year of operation and the 3,500 students who were served during the 1961-62 year attended classes in portable buildings on temporary campus sites.

Enrollment in the 1963-1964 college year, the fourth year of operation, exceeded 8,000, and Miami-Dade became the largest junior college in the south. By 1965-1966 enrollment had risen to 16,981, making Miami-Dade the largest college in Florida with a five year growth rate of ten times the original. By 1967, enrollment had reached 23,403 and in the fall of 1968 enrollment had reached 26,006. The fall 1970 enrollment was 33,513. With the transition from a single campus to a multi-campus college in 1965, a central administrative operation was organized to provide services common to both campuses while at the same time providing a maximum of autonomy to each campus. The college was granted accreditation by the Southern Association of Colleges and Schools in December, 1965.

While many central functions are housed at either or both campuses, the main central administration offices, including that of the President of the College, are housed in the Central Administration Building located at the South Campus, 11011 S.W. 104th Street, Miami, Florida.

The two existing campuses are the South Campus and the North Campus, located at 11380 N.W. 27th Avenue. A Downtown Campus first offered courses in temporary quarters in the fall of 1970 and is expected to be fully operational upon completion of a limited-acreage, high-rise educational complex scheduled to be opened during the academic year 1972-73.

B. NORTH CAMPUS

North Campus facilities include Paul R. Scott Hall, a classroom and administration building; the Mitchell Wolfson Learning Resources Center, containing a library and audio-visual facilities; the J. Neville McArthur Hall of Science and Technology for industrial technologies; the John F. Kennedy Health Center (a 5,000 seat gymnasium); a student center; and ten reconditioned buildings which are used for classrooms and offices. In addition to the John F. Kennedy Center, athletic facilities include a stadium, track, baseball diamonds and tennis courts. A Creative Arts Center with a 500-seat divisible auditorium and arts facilities was occupied in January, 1969. There were 19,873 students enrolled on North Campus in the fall of 1970.

C. DIVISION OF ALLIED HEALTH STUDIES

The Federal Government announced over four years ago that the need for additional middle level workers in the allied health fields in the United States during the next ten years would require over one million new jobs to be filled. Greater Miami with its ever increasing population, coupled with an influx of the aged, will have a need for health workers far beyond that of many metropolitan communities.

In January, 1966 Miami-Dade Junior College established a new academic division, now known as the Division of Allied Health Studies, to meet the challenge of training health workers in South Florida. In July of the same year, the new Division assumed direction of the ongoing Associate Degree Nursing program, now in its eighth year. After eighteen months of study, survey and research, the Division initiated eleven additional health-related programs including the Medical Laboratory Technology program, the first classes enrolling in August, 1967. A thirteenth program was initiated in the fall of 1968. In planning the proposed allied health programs, the Division enlisted the cooperation of the South Florida Hospital Council, the Dade County Medical Association, the East Coast District Dental Society and other professional societies.

D. TABLE OF ORGANIZATION AND ADMINISTRATIVE STAFF

1. College Administration

Peter Masiko, Jr., President

Robert H. McCabe, Executive Vice President

Franklin G. Bouwsma, Vice President for Instructional Resources

John Daly, Vice President for Financial Affairs

Betty Garnet, Director of Information Services

Wilbur G. Holladay, Director of Personnel

Theodore A. Koschler, Vice President for Administration

Douglas E. Matthewson, Director of Admissions and Records

W. Fred Shaw, Vice President for Development

Whitson G. Waldo, Director of Facilities Planning

Gustave G. Wenzel, Director of Institutional Research

Zane Wilson, Director of College Services

2. North Campus

M. Duane Hansen, Vice President

David F. Shuford, Assistant to the Vice President

Carol Zion, Special Assistant to the Vice President

Claude R. Phillips, Jr., Business Manager

Ronald Connelly, Dean of Academic Affairs

David D. Powers, Assistant Dean of Academic Affairs

Mary-Jeanette Taylor, Dean of Student Personnel Services

Cecil B. Nichols, Assistant Dean of Student Personnel Services

Charles Walker, Dean of School and College Relations

John Losak, Director, Counseling, Testing and Research

Daniel R. Derrico, Registrar

Timothy G. Davies, Director, Division of Humanities

Carrie Meek, Director, Community Services Division

George Mehallis, Director, Technical-Vocational Studies Division

Russell K. Sigler, Director, Business Studies Division

Paul Conover, Director, Social Science Division

Adrian Poitras, Director, Natural Science Division

Demie J. Mainieri, Director, Physical Education Division

Elizabeth Lundgren, Director, Allied Health Studies Division

Eleanor Eyman, Director of Library

Edward Bailey, Campus Services Operations Supervisor

James Hughes, Coordinator of Evening Services

3. South Campus

Ambrose Garner, Vice President

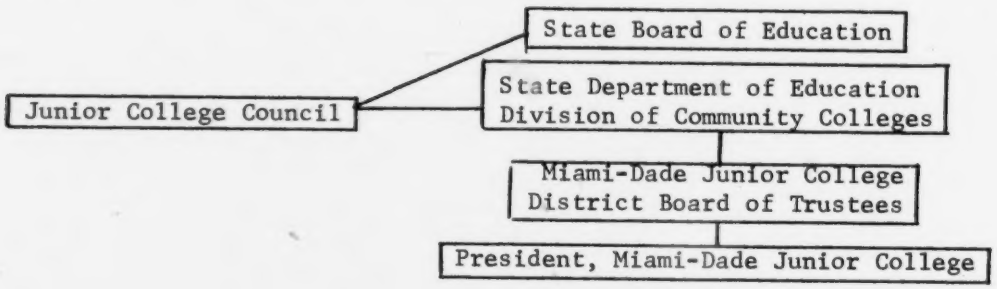
4. Downtown Campus

Thomas W. Fryer, Jr., Vice President

5. County and State Relationships

The Miami-Dade Junior College operates under the legal authority of the Miami-Dade Junior College District Board of Trustees.

All educational matters within the State are under the direction of the State Board of Education. The State Junior College Council determines state-wide policy concerning junior colleges and within the State Department of Education affairs of junior colleges are administered by the Division of Community Colleges.



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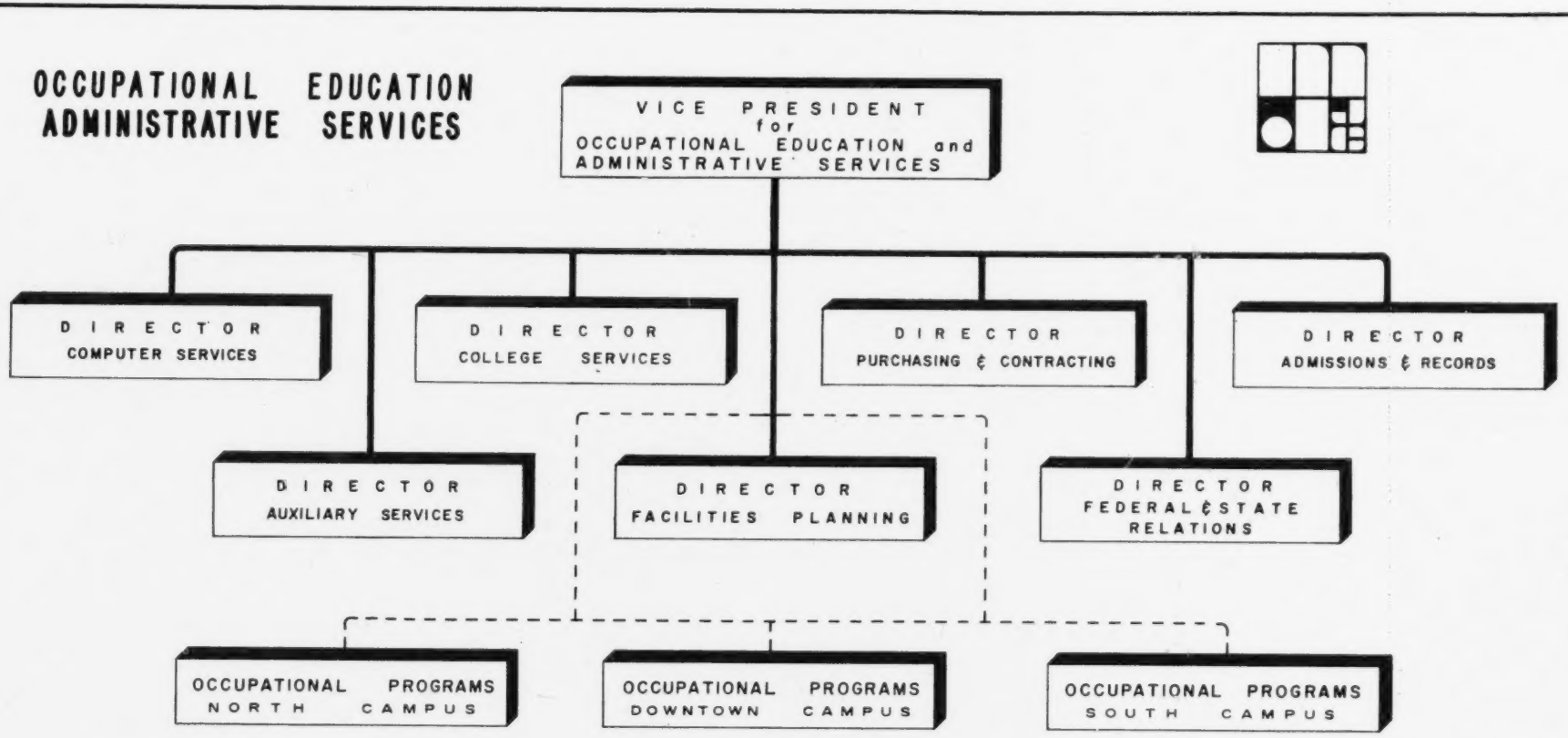
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DIRECTOR PURCHASING & CONTRACTING
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DIRECTOR AUXILIARY SERVICES
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DIRECTOR FEDERAL & STATE RELATIONS
OCCUPATIONAL PROGRAMS NORTH CAMPUS
OCCUPATIONAL PROGRAMS DOWNTOWN CAMPUS
OCCUPATIONAL PROGRAMS SOUTH CAMPUS

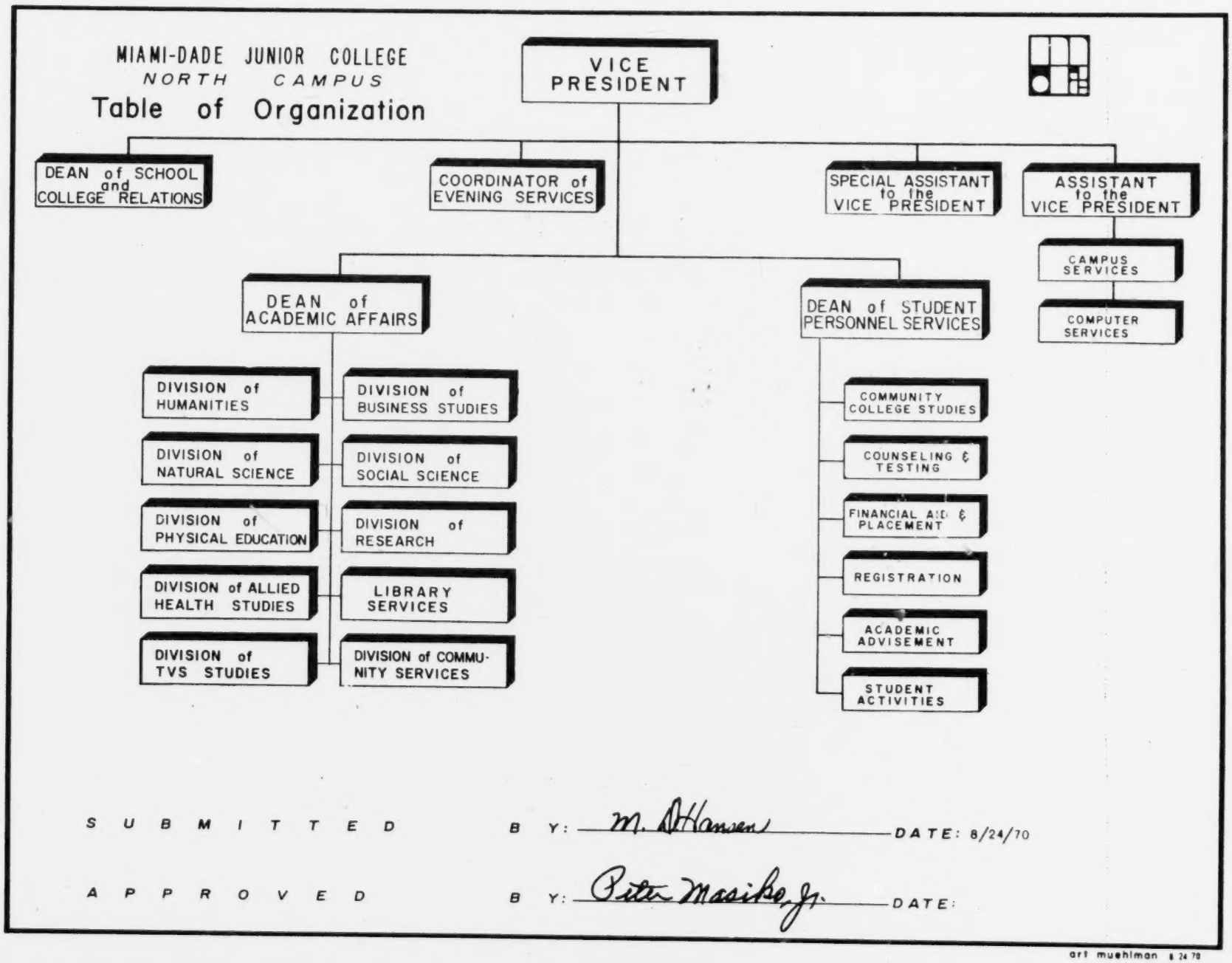
SUBMITTED BY: Theodore A. Koschler Date: 8/17/70

APPROVED BY: Robert H McCabe Date: 8/17/70

art muehlmeier 5/70
Rev. 8/70

MIAMI-DADE JUNIOR COLLEGE
NORTH CAMPUS

Table of Organization



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A P P R O V E D B Y: Peter Masiko, Jr. DATE:

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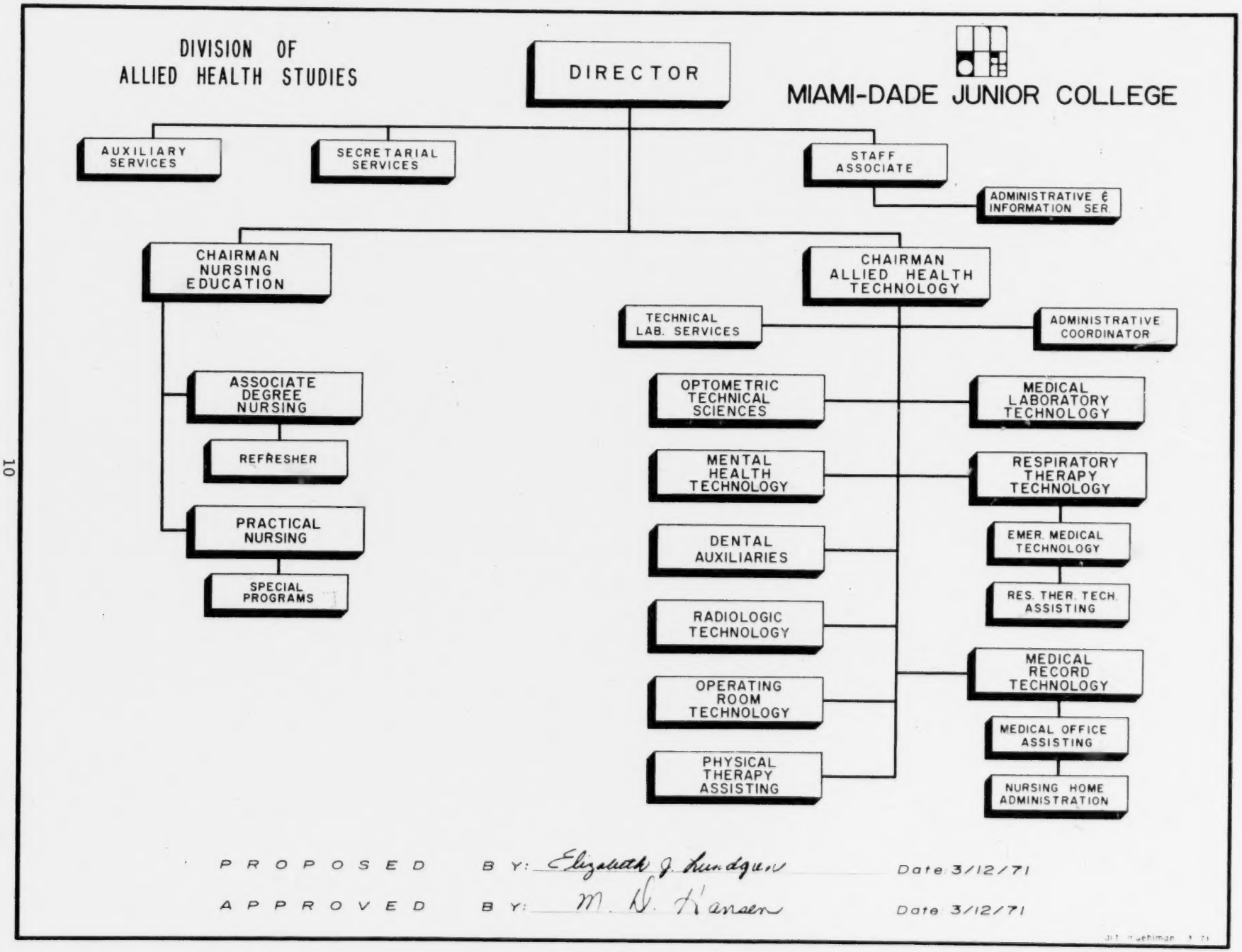

DIVISION OF
ALLIED HEALTH STUDIES
DIRECTOR
MIAMI-DADE JUNIOR COLLEGE
AUXILIARY SERVICES
SECRETARIAL SERVICES
STAFF ASSOCIATE
ADMINISTRATIVE & INFORMATION SER.
CHAIRMAN NURSING EDUCATION
CHAIRMAN ALLIED HEALTH TECHNOLOGY
TECHNICAL LAB. SERVICES
ADMINISTRATIVE COORDINATOR
ASSOCIATE DEGREE NURSING
REFRESHER
PRACTICAL NURSING
SPECIAL PROGRAMS
OPTOMETRIC TECHNICAL SCIENCES
MENTAL HEALTH TECHNOLOGY
DENTAL AUXILIARIES
RADIOLOGIC TECHNOLOGY
OPERATING ROOM TECHNOLOGY
PHYSICAL THERAPY ASSISTING
MEDICAL LABORATORY TECHNOLOGY
RESPIRATORY THERAPY TECHNOLOGY
EMER. MEDICAL TECHNOLOGY
RES. THER. TECH. ASSISTING
MEDICAL RECORD TECHNOLOGY
MEDICAL OFFICE ASSISTING
NURSING HOME ADMINISTRATION
PROPOSED BY: Elizabeth J. Lundgren Date 3/12/71
APPROVED BY: M. D. Hansen Date 3/12/71

E. MT. SINAI CENTER

A two-story educational complex is presently under construction on the property of Mt. Sinai Hospital of Greater Miami, Inc. The construction is funded by a federal Public Health Service Construction Grant under the Allied Health Professions Teaching Facilities Act with proportional matching funds provided by the hospital. Upon completion of the facility, the hospital will lease the building to the College for a period of ten years.

Initially, the College will offer five allied health programs at the Center: Nursing, Medical Laboratory Technology, Medical Record Technology, Practical Nursing, and Operating Room Technology. The latter two are one-year certificate programs and the others are two-year associate degree programs. The technical and natural science courses in each program will be offered at the Center; the remaining general education courses may be taken on the North Campus.

The first floor of the structure houses faculty and administrative offices and the following teaching laboratories: general chemistry, anatomy and physiology, microbiology, clinical chemistry, medical microbiology, nursing and operating room. Each laboratory, with the exception of the nursing and operating room laboratories, is approximately 900 square feet and contains twenty-four student stations. The second floor houses additional faculty offices, medical record technology laboratory, nursing laboratory, reading room-library, classrooms and snack lounge.

F. OTHER DADE COUNTY EDUCATIONAL INSTITUTIONS OFFERING OPPORTUNITIES FOR ADVANCEMENT IN MEDICAL TECHNOLOGY BEYOND THE ASSOCIATE DEGREE

1. The University of Miami
2. Florida International University (opening Fall, 1973)
3. Barry College

G. HEALTH FACILITIES IN DADE COUNTY

Dade County has approximately 2,000 physicians and 600 dentists.

There are thirty-two hospitals with a total bed capacity of 8,745. In addition, there are forty-four nursing homes and homes for the aged. Metropolitan Miami has the state's greatest concentration and variety of hospitals, clinics and other health care institutions and is rapidly developing into a national medical center. Another facility contributing to this development is the Dade County Medical Examiner's Office, an outstanding forensic and public health center.

There exists an ever-increasing need in Miami for technical people in the medical and allied health fields to assist professional personnel in a variety of disciplines delivering health care.

CURRICULUM DEVELOPMENT PROJECT

A. COMMITTEE MEMBERS

The Curriculum Development Project Committee of the Medical Laboratory Technology Program consisted of the following members:

Jerome Bensor

David Lindberg

Janet Rodeheaver

Martha Skogland

Ruth Williams

This committee of professional personnel selected by the college consisted of representatives from the Committee on Certified Laboratory Assistants, the University of Florida Medical Technology Program, a Certified Laboratory Assistant Program and a curriculum specialist. Some committee members had assisted the American Association of Junior Colleges in the preparation of the publication, Guide for Program Planning: Medical Laboratory Technician.

B. GOALS OF THE COMMITTEE

The College presented the following goals to the committee:

1. Define the competencies which differentiate a Certified Laboratory Assistant from a Medical Laboratory Technician. This "difference" must be stated in such a way that courses can be designed to complete the technical requirements for an Associate of Science Degree in Medical Laboratory Technology when the entering student is a Certified Laboratory Assistant (or equivalent).

2. Translate the expected laboratory performances (not hourly requirements) for Certified Laboratory Assistants into a suggested format (sequence) for presentation in a college setting. The equivalent performance should constitute a first phase in a Medical Laboratory Technology program. This will simplify the task of determining germane credit for Certified Laboratory Assistants.

3. Integrate the above two goals to outline the technical portion of an Associate Degree program for the Medical Laboratory Technician.

4. Suggest possible alternatives or variations within the general education and natural science block required by the College. For example, some students may have more transfer credit than others, but all will have earned a two-year degree.

5. Suggest areas in the junior college design which could be emphasized to assure easier transfer for graduates into university programs in medical technology or related fields. This is a secondary consideration. The primary consideration is preparation for career-entry at the technical level.

6. Evaluate present equipment and future space at the Mt. Sinai Center. Recommend additional equipment and suggest most appropriate use of space.

7. Evaluate and make recommendations on the present audio-visual library holdings of the College related to the training of Certified Laboratory Assistants and Medical Laboratory Technicians.

8. Recommend most effective use of clinical facilities available for supervised clinical learning experiences.

C. DEFINITIONS

For purposes of this study a Certified Laboratory Assistant is considered to be a person with a high school education or its equivalent who has been trained in manipulative skills needed to perform simple laboratory procedures under supervision.

A Medical Laboratory Technician is an individual who, through general and technical education in a junior college and a clinical facility, is qualified to perform a high percentage of test procedures on patients. He should detect most technical errors, but by training he is not necessarily equipped to resolve them. He has not been taught to interpret the meaning of most of his laboratory results, nor the methods for developing quality control procedures. He works under the supervision of a Medical Technologist (ASCP) and a pathologist or other clinical scientist; although at times he is capable of working without immediate supervision. With a junior college education or its equivalent requiring some collegiate science courses, coupled with education in medical laboratory techniques, he is prepared to learn the more complex medical laboratory procedures.

A Medical Technologist is a person with a baccalaureate or higher degree plus training in all aspects of medical technology. He is expected to supervise supportive personnel, participate in quality control programs, and develop new procedures. He is expected to recognize and call attention to unusual laboratory results. In general he is expected to exercise a high degree of independent judgment in the performance of his laboratory duties.

PRESENT MEDICAL LABORATORY TECHNOLOGY PROGRAM AS EVALUATED BY THE COMMITTEE

A. STRENGTHS

Miami-Dade Junior College is situated in a progressive community which is willing to cooperate with college officials to attain desired goals.

The officials of the College and the administration of the Division of Allied Health Studies are most receptive to innovative ideas. Their common goal is to provide a sound educational experience.

Faculty representatives from other divisions have demonstrated a high degree of cooperation in supporting the development of multi-disciplinary programs in the Division of Allied Health Studies.

Another strength is the fine equipment currently owned by the College for use in teaching laboratories.

Availability of counseling services for students through the Division of Counseling, Testing and Educational Research is a positive factor.

Other plus factors are the Mitchell Wolfson Learning Resources Center which houses an excellent library and extensive audio-visual facilities considered to be among the finest in the Southeastern United States.

B. WEAKNESSES

Miami-Dade Junior College's existing program for Medical Laboratory Technicians was found to be inadequate, primarily in the area of clinical

experience concentrated in the externship, a two hour credit course in the final term of the program. In the opinion of the committee this format, although one which has been acceptable in the past, does not permit proper coordination of college academic studies and clinical experience.

It appears that in the past the communications between the college faculty and the staffs of the clinical facilities have been almost non-existent. The department has failed in the past to specify objectives related to desired levels of performance. Another deficiency was found to exist in the supervision by college personnel of the medical laboratory technology students during the clinical externship. The committee recognizes that the clinical facility may wish to exercise the prerogative of total supervision in at least two areas: Its responsibility for patient care and the necessity for careful monitoring of the operation of certain instruments.

At present, adequate space is not available. Quarters for teaching laboratories are not large enough to accommodate all the equipment already purchased, necessitating the storage of some instruments. Such storage could contribute to instrument deterioration and furthermore, is considered to represent poor utilization of funds.

Additional college facilities now being constructed at Mt. Sinai Hospital of Greater Miami, Inc. will alleviate the immediate space problem.

NEW PROGRAM PROPOSAL

A. FLEXIBILITY FOR INDIVIDUALIZED PROGRAM PLANNING

The Medical Laboratory Technology program is presented with variations or options to accommodate students with varying educational background, motivation and economic need. Such flexibility will permit immediate employability on graduation and varying degrees of eligibility for advanced educational opportunity depending on the number of transferable credits achieved. Students will be advised in their course selection based on their past and present scholastic preparation and demonstrated ability. Programs selected will prepare students for a career in medical laboratory technology, for state licensure in Florida and for writing the Medical Laboratory Technician certification examination administered by the Registry of Medical Technologists of the American Society of Clinical Pathologists. Pages 27 & 28 present two possible program plans; one with fewer transferable credits than the other. Both provide equal career-entry opportunities upon graduation.

B. BLOCK CONCEPT

A recent report from the task force appointed by former Health, Education, and Welfare Secretary Finch to study higher education states ". . . . a growing rigidity and uniformity of structure makes higher education reflect less and less the interest of society." The report suggests colleges and universities should take account of work and education experiences students get outside school. "We believe there is a compelling need for new approaches to higher education. Not only new types of colleges with new missions, but also new patterns of going to college."

The traditional programs for training laboratory personnel have prescribed a general pattern of academic course work followed by a period of training in the clinical laboratory. This format has several undesirable features:

1. The academic institution relinquishes its educational responsibilities to a facility not necessarily equipped to provide effective teaching.

2. The cost of training which should reasonably fall on the academic institution becomes a part of the total cost of patient care and is ultimately assumed by the patient.

3. Such training, often requiring a one to one student-instructor ratio, is exorbitantly expensive.

4. The period of training is customarily designated in terms of hours and credits, and learning activities may be chosen in relation to allotted time rather than in terms of desirable performance objectives.

The proposed program is presented in an effort to suggest a new approach to medical laboratory training which will eliminate many of the objectionable features of traditional programs. Basically, it:

1. Retains the responsibility of teaching within the junior college.

2. Provides for credit through demonstration of skills and learning experiences acquired outside the college.

3. Removes the restrictions imposed by required hours, weeks or credits.

For purposes of planning, the spectrum of laboratory subjects to be mastered has been divided into seven blocks of related knowledge and skills. The blocks are planned to be manageable in size and content so that they might be offered in a number of possible variations in sequence. The subjects in each block are treated as chemical, biological, and physiological interrelationships with laboratory instrumentation and methodology. The blocks are each composed of knowledge and skill factors which might be challenged by examination by students with previously acquired laboratory experience. The mastery of the body of knowledge required for successful challenge of one block may reasonably be expected to be already attained by some students, although few could be expected to successfully challenge the entire sequence. The committee believes that the block concept provides more meaningful and significant exposure to medical laboratory technology than does the traditional partition into basic scientific disciplines which are studied separately.

The junior college is responsible for the teaching of scientific principles in both the classroom and the teaching laboratory. In the teaching laboratory the student attains proficiency in the performance of laboratory procedures. The clinical facility in cooperation with the junior college, then provides for the demonstration of proficiencies and the application of principles in the clinical laboratory setting.

The module or block concept herein proposed provides an integration of practicum with didactic activity at the very beginning of the student's

course of study and continues this relationship throughout the entire program. The important knowledge factors are periodically reinforced as the student learns applications of principles early in his educational experience and considers new applications of the principles in later laboratory blocks.

This suggested program follows the usual pattern of laboratory organization. Each laboratory discipline is represented in one or more blocks. The traditionally time oriented sequencing of training is abandoned in favor of the concept of performance orientation. The performance objectives are listed for each block. Each student, upon entering a laboratory block, studies in this area until he achieves the performance objectives and masters the knowledge factors of that block. If he is unable to demonstrate competency, he should continue to study until he is competent or be re-cycled if this procedure seems more advisable. The ultimate goal is for every student to successfully complete every block.

Any student should have the privilege of challenging an entire block or any portion of it. If he is able to demonstrate by means of proficiency examinations that he is competent, he should be granted such credit or advanced standing as is deemed appropriate by the junior college.

The granting of credits for blocks, singly or collectively, is left to the discretion and judgment of the Division of Allied Health Studies with the cooperation of the College Administration.

The understanding of principles, the development of necessary skills and facility in performance require a balanced program within the junior college and the clinical facility. This proposed program for Miami-Dade Junior College has been structured to attain these goals.

The structure of the laboratory block concept is based upon several factors which are essential to successful implementation of the concept:

1. The design of any particular block is not necessarily proposed herein with any delimitations regarding time; i.e., the number of clock hours of student contact in a block is intentionally not specified. The determination of time frames is intended to be the prerogative of the instructional staff.

2. The subject material content of blocks is presented herein as a suggested format. The detailed scheduling of block content should be flexible and should be left to the discretion of the faculty.

3. Scheduling of blocks need not necessarily coincide with the academic calendar of the college. If necessary, blocks should be continued from one academic term to another.

4. The availability of lecturers, clinical facilities, equipment, etc., may necessitate changes in the sequence of block scheduling. The concept proposed here is intended to permit the rearrangement of blocks except for Blocks I and VIII.

5. The basic objective of the block concept is that of achieving competency in laboratory subjects. Teaching should be directed to this goal and not be related to limitations imposed by a scheduled period of time assigned to the study of any one subject.

Clinical laboratory practicum is provided in a variety of clinical settings, including independent laboratories and the laboratories of local hospitals which are accredited by the Joint Commission on Accreditation of Hospitals of the American Hospital Association and of the American Medical Association.

It should be clearly understood that it is expected that the Division of Allied Health Studies of Miami-Dade Junior College will work with such collaborative agencies of the American Medical Association as needed to ensure accreditation of the program when accreditation is available.

C. CLINICAL PRACTICUM

In order to ascertain the status of the previous clinical practicum arrangements, a survey committee from the Junior College was appointed. It visited each clinical facility to evaluate directorship, the educational preparation of personnel, the extent and variety of tests done and the space and time available for students. The reception given the survey committee was warm and enthusiastic everywhere. All efforts were made to achieve rapport since personal and public relations between the Junior College and pathologists, supervisors and other laboratory personnel are very important. Appropriate contractual arrangements were activated with selected clinical facilities.

Since the clinical facilities visited presented varying environments, it was decided that in the future the student should have experience in two or more facilities. Consideration of the propinquity of the student's home to the facility should be given in the assignment to a clinical facility.

Because there were students in the existing program, an interim plan was adopted. A detailed list of task performance objectives was made by the Junior College with a suggested number of successful performances of each procedure to guide the clinical supervisor in evaluation. The list represents a minimal requirement and its completion is the responsibility of the student. Accomplishment of satisfactory performance is determined by the clinical supervisor.

The survey committee also recognized that the relationship between students and laboratory personnel is most important in accomplishment of the educational objectives. Tensions may arise purely through incompatibility between individuals. There may be a difference of opinion as to the accuracy or specificity of certain procedures.

On the basis of the experience of the survey committee, the Curriculum Development Committee believes that the resolution of such situations is the responsibility of a teaching coordinator from the Junior College who should visit the clinical facility at least once a week.

This coordinator should have the following responsibilities:

1. Meet with the director of the laboratory for a general report.
2. Contact each clinical supervisor for an individual progress report.
3. Counsel and guide the student to a fuller integration with the hospital area and to a better understanding of his problems.
4. Recommend changes and further development of the program.

Such interaction related to the student's performance in the clinical facility may also reveal ethical or behavioral characteristics which were not evident in the classroom. Such problems must be thoroughly investigated, guidance given, and judgment made by the Junior College as to the suitability of the student for the profession of the Medical Laboratory Technician.

FIRST TERM FOR ALL MEDICAL LABORATORY TECHNOLOGY STUDENTS

FIRST TERM (16 weeks)		CREDITS
MLT 101	Block I - Introduction to Medical Laboratory Technology	4
CHM 105	Chemistry for Health and Related Services	3
CHM 106	Chemistry for Health and Related Services Laboratory	1
PED 209	First Aid	2
PSY 203	Human Relations	3
SSC 101	Social Science	3
	TOTAL CREDITS:	16

It should be noted in the sample programs for terms two through five that the spring session but not the summer session has been included in the schedule. The student may elect to decrease his load in other terms by utilizing the summer term.

SAMPLE OF A TECHNICAL PROGRAM IN MEDICAL LABORATORY TECHNOLOGY (SECOND THRU FIFTH TERM)

SECOND TERM (16 weeks)		CREDITS
MLT 154	Block II - Clinical Hematology	4
MLT 152	Block III - Instrumentation	2
MLT 155	Pre-Clinical Microbiology	4
BIO 114	Human Physiology	3
BIO 115	Human Physiology Laboratory	1
	TOTAL CREDITS	14

THIRD TERM (6 weeks)		CREDITS
MLT 161	Block IV - Basic Clinical Chemistry	4
MTH 100	Introductory Algebra	3
	TOTAL CREDITS	7

FOURTH TERM (16 weeks)		CREDITS
MLT 201	Block V - Advanced Clinical Chemistry and Specimen Handling	4
MLT 202	Block VI - Immunohematology, Serology and Coagulation	2
MLT 203	Block VII - Clinical Microbiology	3
ENG 111	Expository Writing	3
	TOTAL CREDITS	12

FIFTH TERM (16 weeks)		CREDITS
MLT 299	Block VIII - Clinical Practicum	3
ENG 112	Technical Report Writing	3
SSC 102	Social Science	3
ELECTIVE		3
	TOTAL CREDITS	12

Total Credits: 61

SAMPLE OF A TECHNICAL PROGRAM OFFERING MORE TRANSFERABLE CREDITS (SECOND THRU FIFTH TERM)

SECOND TERM (16 weeks)		CREDITS
MLT 154	Block II - Clinical Hematology	4
MLT 152	Block III - Instrumentation	2
BIO 211	Principles of Biology	4
*CHM 101	General Chemistry	4
MTH 110	College Algebra	3
	TOTAL CREDITS	17

THIRD TERM (6 weeks)		CREDITS
MLT 161	Block IV - Basic Clinical Chemistry	4
ENG 101	English Composition	3
	TOTAL CREDITS	7

FOURTH TERM (16 weeks)		CREDITS
MLT 201	Block V - Advanced Clinical Chemistry and Specimen Handling	4
MLT 202	Block VI - Immunohematology, Serology and Coagulation	2
MLT 203	Block VII - Clinical Microbiology	3
BIO 212	Principles of Biology	4
*CHM 102	General Chemistry	4
	TOTAL CREDITS	17

FIFTH TERM (16 weeks)		CREDITS
MLT 299	Block VIII - Clinical Practicum	3
BIO 219	Anatomy and Physiology	4
*CHM 103	General Chemistry and Qualitative Analysis	4
ENG 102	English Composition	3
SSC 102	Social Science	3
	TOTAL CREDITS	17

*The sequence CHM 151-152 may be substituted for the sequence CHM 101-102-103 resulting in a total of two less credits.

Total Credits: 74

STATEMENT WHICH SHOULD BE INCLUDED IN THE CATALOG BEFORE THE COURSE DESCRIPTIONS

Although the contact hours per week are specified for each block, it should be emphasized that the student's progress is based on his performance in the block. The student completes the course when he satisfactorily completes all performance objectives of the course.

It should be noted that there is no demarcation between lecture, laboratory, and clinic hours within a particular block.

In selection of chemistry courses, the following consideration should be noted:

CHM 105-106

a. Is not transferable.

b. Is considered to be of more practical value for career entry in the medical laboratory technology field.

CHM 151-152

a. Can be substituted for CHM 101-102-103.

b. Is more concentrated than CHM 101-102-103.

c. Has two less credits than CHM 101-102-103.

d. Takes less time than CHM 101-102-103.

e. Is college transferable, as is CHM 101-102-103.

RATIONALE FOR SELECTION OF COURSES IN OPTIONAL PROGRAMS

The courses listed in the sample programs are suggested for the curriculum leading to an Associate of Science Degree for Medical Laboratory Technicians at Miami-Dade Junior College.

Course selections were made using three major criteria:

1. Students should be encouraged to enroll in programs which are challenging and rewarding, but within the limits of their individual capabilities. The attrition of many highly motivated and promising students from occupational programs may be due to their inability to cope with fast-paced university-level academic courses. It is felt that in order to be effective, the Medical Laboratory Technology program should be flexible in design to enable students to obtain adequate career preparation. They may not be equipped to master all components of a university parallel course of study.

2. Each student's program should include as many transferable academic credits as may be within his capabilities. Such a program might provide the opportunity for upward academic mobility.

3. Within the guidelines inherent in the two preceding criteria, courses should be selected which are practical and useful in light of the student's individual occupational and educational goals.

It will be noted that the sample programs include different courses in Chemistry and Biology. The course selections were made in these areas after consultation with faculty members of these two departments,

and represent different levels of expected student performance and achievement, related to secondary school preparation and measured ability.

In addition to the courses designated to include Medical Laboratory Blocks I through VIII, one new course is proposed for inclusion in the Associate of Science Program suggested on page 27.

This course (later described in detail) is entitled "Pre-Clinical Microbiology" and is identified as MLT 155. It is proposed because there is apparently no single equivalent course presently offered at Miami-Dade Junior College. It is felt that principles of microbiology should be presented in addition to the clinical microbiology taught in Block VII, (MLT 203). MLT 155 is listed only in the program on page 27 because it is felt that students in the second program (listed on page 28) will receive similar preparation in BIO 211-212 sequence.

PROPOSED NEW COURSES

A. MEDICAL LABORATORY BLOCK I (Introduction to Medical Laboratory Technology)

Block I of the Medical Laboratory Technology sequence consists primarily of an orientation to the fields of allied health, with emphasis on the clinical laboratory. Also included is an introduction to urinalysis and the techniques of obtaining blood samples.

Because of the introductory nature of both lecture and laboratory material presented, Block I should be the first block in any student's sequence of professional preparation. The order in which the subject material in this block is presented should be at the option of the instructor. It is possible that this entire block may be successfully challenged by graduates of certified laboratory assistant or military laboratory schools.

1. Performance Objectives

   a. Qualitative and semiquantitative chemical tests on urine specimens.
   b. Microscopic examinations of urinary sediments.
   c. Sterile preparation of sites for venipuncture and dermal (fingertip or heel) puncture.
   d. Venipuncture and blood specimen collection.
   e. Dermal puncture and blood specimen collection.
   f. Use of basic glassware for measuring, and techniques of weighing with macro and semimicro balances.

2. Knowledge Factors To Be Attained

a. Relationships among and within the allied health professions; patient care systems; the role of the medical laboratory.

b. Use of the metric system.

c. Basic medical terminology.

d. Elementary medical ethics.

e. Principles and techniques of skin preparation prior to blood sample collection.

f. Laboratory-related first aid, safety, and cleanliness.

g. Legal relationships of the Medical Laboratory Technician to the patient, the laboratory, and the physician.

h. Relationships of certification and licensure to the Medical Laboratory Technician and his job.

i. Elementary understanding of urinary tract pathology which relates to routine urinalysis.

3. Subjects for Presentation

KNOWLEDGE DEVELOPMENT	SKILL DEVELOPMENT & APPLICATION
Orientation: introduction to allied health and medical laboratory.	Setup and orientation to teaching laboratory - TL
Medical terminology.	Hospital tours and clinical lab orientation - CL
Specimen handling; urines and dipstick urinalysis; physical properties of urine; gross exam.	Macro urinalysis - CL & TL
Microscopic analysis of urine.	Microscopes, micro urinalysis - TL
Chemical tests of urine.	Urine microscopics - CL
Pregnancy tests, hormones, metabolites.	Urine chemistries, pregnancy tests - TL
General review of urinalysis.	Routine urinalysis - CL
Weights and measures, metric system.	Scales, glassware, balances; use and care - TL
Sterile techniques; blood drawing equipment & techniques.	Blood drawing; venipuncture & dermal puncture - TL
First aid in lab; medical ethics.	Blood drawing - CL
Legal aspects relating to the Medical Laboratory Technician.	ECG - TL

Lab certification & licensure;
miscellaneous administrative
subjects.

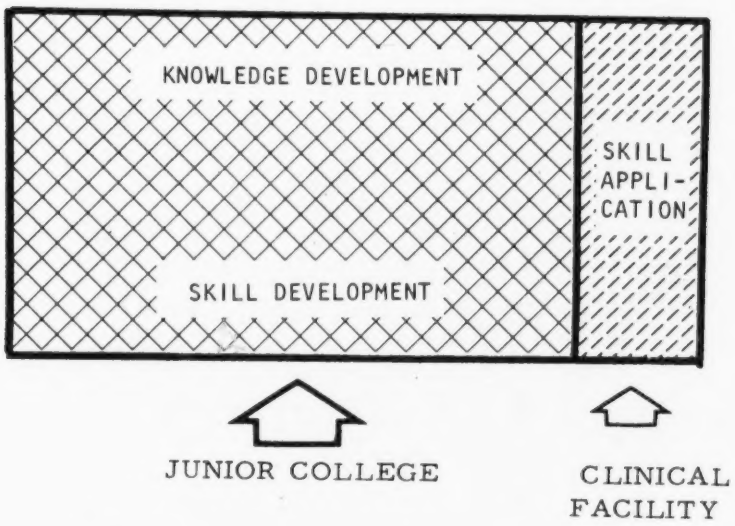
ECG

Note: TL - Teaching Lab; CL - Clinical Lab

4. Suggested Emphasis on Activities

MEDICAL LABORATORY BLOCK I

INTRODUCTION TO MEDICAL LABORATORY TECHNOLOGY



B. MEDICAL LABORATORY BLOCK II (Clinical Hematology)

Block II of the Medical Laboratory Technology sequence consists of a series of learning activities dealing with basic hematology.

1. Performance Objectives

a. Dilution of specimens for cell counts, including the use of microscope and hemocytometer.

b. Dilution, reading, and calculation of hemoglobin determinations.

c. Collection, centrifugation, and reading of hematocrits.

d. Preparation and staining of blood films for hematology.

e. Evaluation of red blood cells, white blood cells, and platelets on blood films.

Note: It is possible that all performance objectives except part e. might be successfully challenged by Certified Laboratory Assistants. Persons who have completed laboratory training in military laboratory schools might challenge the entire block.

2. Knowledge Factors To Be Attained

a. Principles of blood formation, composition, and function.

b. Types of blood cells and their functions.

c. Knowledge and importance of various hemoglobins.

d. Significance of hematologic disorders.

e. Purposes of hematological tests in diagnosis of diseases.

3. Subjects For Presentation

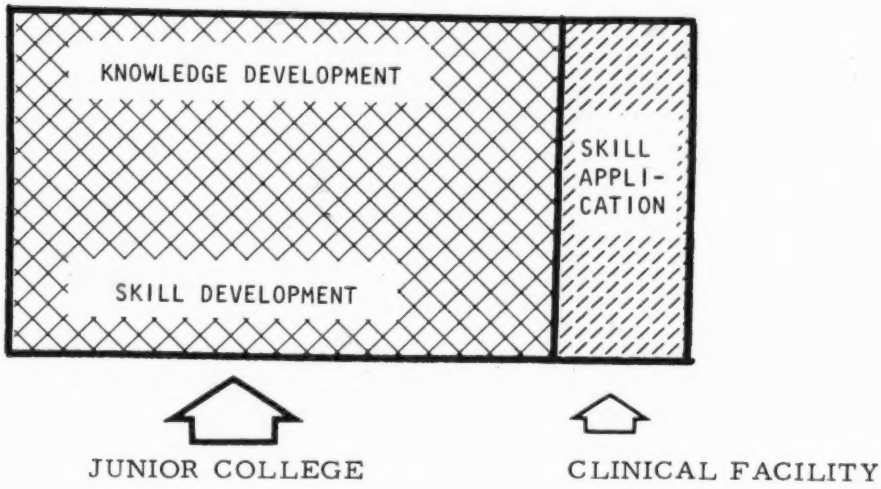
KNOWLEDGE DEVELOPMENT	SKILL DEVELOPMENT & APPLICATION
Composition, function, formation of blood.	Microscopes, counting chambers diluting pipets - TL
Origin and classification of blood cells.	Hemoglobin, Hematocrit - TL
WBC & RBC, reticulocytes, platelets	Cell counting - TL & CL
Basic principles of automated hematology equipment & quality control.	Differential films, stains, counts - TL
Hematologic disorders.	Practice hematology procedures - TL & CL
Other hematology procedures (sed rate, fragility, indices, sickle prep, etc.).	

Note: TL - Teaching Lab, CL - Clinical Lab

4. Suggested Emphasis on Activities

MEDICAL LABORATORY BLOCK II

CLINICAL HEMATOLOGY



C. MEDICAL LABORATORY BLOCK III (Instrumentation)

Block III of the Medical Laboratory Technology sequence deals with elementary laboratory instrumentation. It is recommended that this unit be taught in the classroom and the teaching laboratory only, with the demonstration of competency in the clinical setting to be included in other blocks.

1. Performance Objectives

   a. Use of voltmeters and other testing equipment.
   b. Operation and maintenance of filter and grating photometers, spectrophotometers, fluorometers, electrometric titrators, potentiometric analytical equipment, and other electrical and electronic equipment customarily used in the clinical laboratory.
   c. Operation, maintenance of flame photometers.
   d. Operation, maintenance of clinical gasometric apparatus.

2. Knowledge Factors To Be Attained

   a. The physics of light and electricity as applicable to the operation of photometers, flame photometers, fluorometers, spectrophotometers and other electronic and electrical equipment.
   b. Principles of operation of clinical gasometric apparatus.
   c. Orientation to the operation, care and use of clinical laboratory instruments.

3. Subjects For Presentation

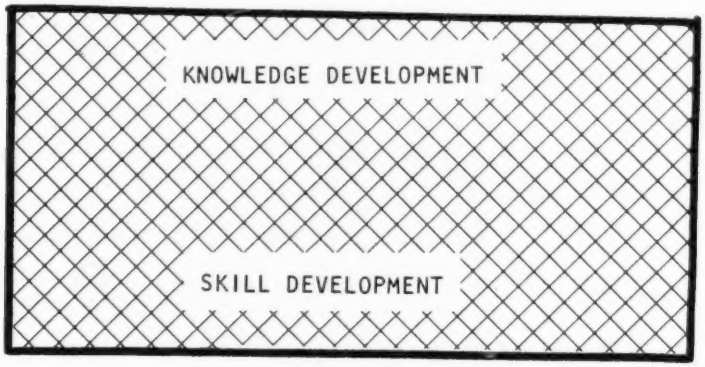
KNOWLEDGE DEVELOPMENT	SKILL DEVELOPMENT & APPLICATION
Safety; electricity & light.	Voltmeters; batteries; resistance - TL
Principles of photometry, spectrophotometry, flame photometry.	Examination, dissection, calibration of spectrophotometers - TL
Principles of fluorometry.	Examination, operation of flame photometers - TL
Principles of gasometric, electrometric, potentiometric analysis; other equipment.	Demonstration of fluorometric principles & instruments - TL
	Gasometric techniques (i.e., Van Slyke, Natelson), electrometric (i.e., Cotlove), potentiometric (i.e., pH meters & electrodes) - TL

Note: TL - Teaching Lab

4. Suggested Emphasis on Activities

MEDICAL LABORATORY BLOCK III

INSTRUMENTATION



JUNIOR COLLEGE

D. MEDICAL LABORATORY BLOCK IV (Basic Clinical Chemistry)

Block IV of the Medical Laboratory Technology professional sequence deals with some of the instruments and methods used mainly in the clinical chemistry laboratory.

1. Performance Objectives

a. Operation and maintenance of single and multi-channel automated analysis equipment.

b. Performance of simple repairs and replacements on automated analysis equipment, such as replacement of exciter lamps, pump tubing, dialyzer membranes, connecting lines and change of recorder paper rolls. (Somewhat more complex repairs may be taught to those students who exhibit interest, aptitude and an appropriate background of experience in working with electrical and electronic equipment.)

c. The performance of at least five clinical chemistry techniques using automated equipment, to include startup, calibration, test performance and calculation of results. To be followed by cleanout, shutdown and necessary cleanup.

d. The conversion of automated analytical equipment from use for one determination (or set of determinations) to another, using instruction manuals provided by manufacturer of equipment.

e. Recognition of abnormalities of operation of automated equipment. Trouble shooting of problems not required.

f. Performance of clinical determinations, using titrimetric, gravimetric, electrometric, manual colorimetric and spectrophotometric methods.

g. Recognition of potential errors related to quality control procedures.

2. Knowledge Factors To Be Attained

a. The principles of operation of various types of automated equipment used in the clinical chemistry laboratory.

b. The steps and procedures used in routine setup, operation, cleanup, shutdown of automated analytical instruments and the reasons for each of these steps.

c. The similarities and differences between automated and manual clinical chemistry methods.

d. The significance of each of the common clinical chemistry laboratory tests in relation to disease states.

e. Principles of quality control.

3. Subjects For Presentation

KNOWLEDGE DEVELOPMENT*	SKILL DEVELOPMENT & APPLICATION
Principles of automated analysis: pumps, dialyzers, system maintenance.	Autoanalyzers - TL & CL
Automated chemistries, including flame methods.	Titrimetric & electrometric analyses - TL & CL
Automated enzymes, proteins, hematology methods.	BUN, glucose, bilirubin, etc. - TL & CL
Wet chemistries; titrimetric, gravimetric, electrometric, colorimetric & spectrophotometric methods.	
Quality control in chemistry.	

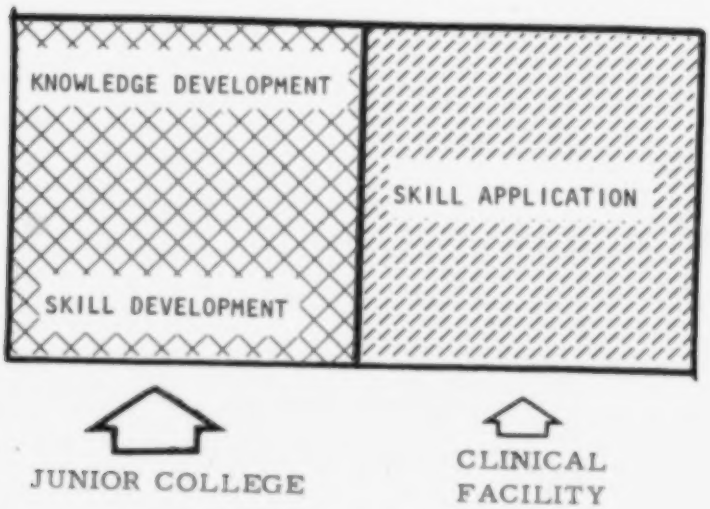
Note: TL - Teaching Lab, CL - Clinical Lab

*In each area of knowledge development the principles studies will include appropriate related physiological chemistry.

4. Suggested Emphasis on Activities

MEDICAL LABORATORY BLOCK IV

BASIC CLINICAL CHEMISTRY



E. MEDICAL LABORATORY BLOCK V (Advanced Clinical Chemistry and Specimen Handling)

Block V of the Medical Laboratory Technology sequence is primarily directed at the development of skills and knowledge in the area of clinical chemistry.

1. Performance Objectives

a. Performance of flocculation and turbidity tests.

b. Performance of protein determinations, including the concentration of specimens for protein electrophoresis and the operation of electrophoretic equipment and densitometric apparatus for examining electrophoretic patterns.

c. Determination of enzymes by colorimetric and ultraviolet spectrophotometric techniques including amyloclastic lipolytic or other appropriate techniques.

d. Determination of pH, pCO_2 and pO_2 on blood.

e. Determination of pH on urine, gastric secretions, solutions etc., using appropriate equipment.

Note: All or parts of performance objectives a. and e. might be successfully challenged by Certified Laboratory Assistants. Persons who have completed laboratory training in military schools may challenge other portions of the performance objectives.

2. Knowledge Factors To Be Attained

a. Principles of electrophoretic methods and instrumentation.

b. Buffer systems and instrumentation used in potentiometric measurements.

c. Function and significance of enzymes.

d. Disease states associated with various clinical chemistry test procedures.

e. Elementary principles of histologic and cytologic specimen processing; relationships of these principles to the routine responsibilities of receiving, fixing, distributing and/or holding these specimens for their respective laboratory departments.

3. Subjects For Presentation

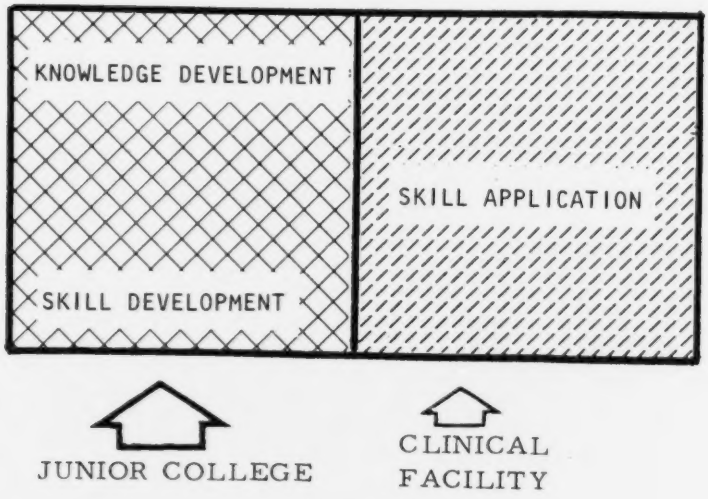
KNOWLEDGE DEVELOPMENT	SKILL DEVELOPMENT & APPLICATION
Protein methods, salting-out, turbidities, flocculations, osmometry, spinal fluid proteins.	Flocculation, turbidity, protein methods, osmometers - TL & CL
Electrophoresis of serum, hemoglobin, spinal fluid concentrates, urine.	Electrophoresis - TL & CL
Enzymes, including GPT, GOT, LDH and its isoenzymes, CPK, amylase, lipase, etc.	Enzymes - TL & CL
Buffer systems related to pH, pCO_2, pO_2; gastric analysis.	Blood gases & pH measurements - TL & CL
Specimen handling, orientation to histology & cytology.	

Note: TL - Teaching Lab, CL - Clinical Lab

4. Suggested Emphasis on Activities

MEDICAL LABORATORY BLOCK V

ADVANCED CLINICAL CHEMISTRY
AND SPECIMEN HANDLING



F. MEDICAL LABORATORY BLOCK VI (Immunohematology, Serology and Coagulation)

Block VI of the Medical Laboratory Technology sequence consists of knowledge and skill development in the areas of serology, blood banking and coagulation.

1. Performance Objectives

   a. Performance of commonly used serological tests based upon the principles of agglutination, precipitation and flocculation.
   b. Performance of blood grouping and typing.
   c. Cross matching.
   d. Donor screening including history, measuring and recording temperatures, pulse, blood pressure, hemoglobin, weight and height and proper completion of necessary forms.
   e. Performance of coagulation procedures which are commonly used in clinical laboratories.

2. Knowledge Factors To Be Attained

   a. Principles of common serological tests and their clinical importance.
   b. Procedures and precautions associated with blood banking, donor selection and component preparation.
   c. The coagulation mechanism including the rationale for common tests used for detection of abnormalities.

3. Subjects For Presentation

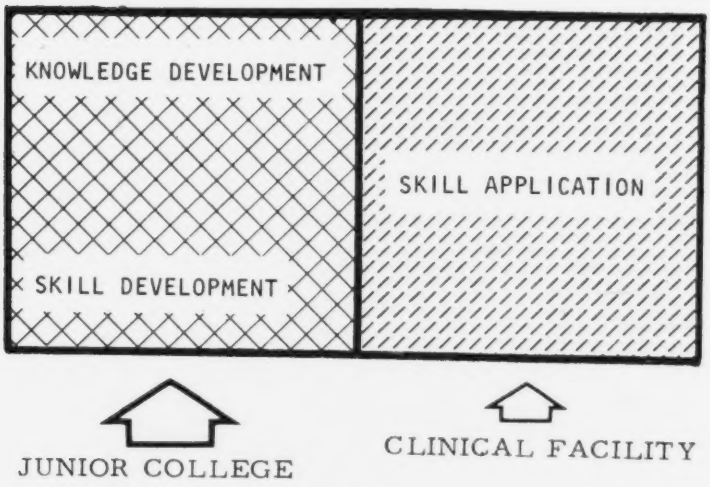
KNOWLEDGE DEVELOPMENT	SKILL DEVELOPMENT & APPLICATION
Serological tests; precipitation, agglutination, flocculation, etc. (i.e., VDRL, heterophile antibodies, anti-nuclear antigen tests, etc.)	Serological tests - TL & CL
	Blood banking - TL & CL
Elementary immunology, introduction to blood banking: blood groups & types.	Coagulation - TL & CL
Blood banking; compatibility, Coombs, donor selection components & their preparation; record keeping.	
Coagulation mechanism & tests.	

Note: TL - Teaching Lab, CL - Clinical Lab

4. Suggested Emphasis on Activities

MEDICAL LABORATORY BLOCK VI

IMMUNOHEMATOLOGY, SEROLOGY AND COAGULATION



G. MEDICAL LABORATORY BLOCK VII (Clinical Microbiology)

Block VII of the Medical Laboratory Technology sequence consists of knowledge and skill development in clinical bacteriology, mycology and parasitology.

1. Performance Objectives

a. Ability to test for and recognize gross abnormalities of fecal specimens, such as blood, mucus and trypsin.

b. Demonstration of proper methods of concentration of feces for parasitology.

c. Demonstration of methods for microscopic examination of feces for fat and starch, including stains.

d. Identification of common parasites.

e. Preparation and sterilization of media.

f. Preparation of glassware and equipment for use in the microbiology laboratory.

g. Demonstration of techniques of inoculation of primary and secondary cultures and subcultures, with recognition of differing types of colonies on primary media, including staining and examination of smears.

h. Demonstration of techniques for hospital epidemiological monitoring.

i. Demonstration of techniques for concentration and culturing of specimens for identification of acid-fast bacilli.

j. Use of equipment for producing various cultural environments such as CO_2, light, temperature and oxygen supply.

k. Demonstration of inoculation and setup of disc sensitivities.

l. Demonstration of methods for preparation of specimens for culturing and identification of fungi.

Note: It is suggested that performance objectives a, b, c, d, e, f, i, and k are those most likely to be challenged by persons who have completed Certified Laboratory Assistant or military training courses.

2. Knowledge Factors To Be Attained

a. Alimentary physiology and its relationship to the examination of feces.

b. Common methods for gross and microscopic examination of feces, and limitations thereof.

c. Common regional parasitic diseases and methods for their detection including preparation of specimens for microscopic examination.

d. Prevention of laboratory accidents and hospital acquired infections.

e. Methods of sterilization of utensils, supplies and media for microbiological use.

f. Methods of acquiring, handling, recording, use and disposal of microbiological specimens.

g. Methods and materials used in staining bacterial smears.

h. Characteristics of pathogens, their reproductive and growth characteristics, the types of organisms ordinarily encountered in the clinical laboratory and their importance.

i. Methods of hospital epidemiological monitoring.

j. Characteristics of acid-fast bacilli; their relationship to disease; techniques of handling ABF specimens and cultures.

k. Techniques and limitations of sensitivity testing with antimicrobial agents.

l. Diseases associated with fungi; techniques for culturing.

m. The epidemiology of venereal diseases; techniques for culturing, detecting, and identifying organisms associated with VD.

3. Subjects For Presentation

KNOWLEDGE DEVELOPMENT	SKILL DEVELOPMENT & APPLICATION
GI physiology, composition of feces, gross exam of feces.	Gross & micro fecal exams - TL & CL
Fecal concentration, preparation of specimens, smears, parasitic diseases & vectors.	Concentration & flotation - TL & CL
Prevention of laboratory accidents in microbiology; sterilization, specimen handling & disposal, bacterial types, media, stains, indicators.	Laboratory setup for microbiology; media preparation including RODAC plates - TL
	Hospital monitoring - CL
	Inoculation of media, subculturing, techniques, colony counting, staining of smears - TL & CL

Hospital epidemiology; use of RODAC and other techniques.

Bacterial reproduction; colonies, motility, inoculation methods, smears & stains, hanging drops, pour plates.

Bacterial cultures & identification; special environmental growth conditions (anaerobic, microaerophilic) and other special culture methods.

Antibiotic sensitivity testing.

Venereal disease epidemiology & detection.

Medical mycology

Stool culture techniques, Brewer and candle jars - TL & CL

Sensitivity setups - TL & CL

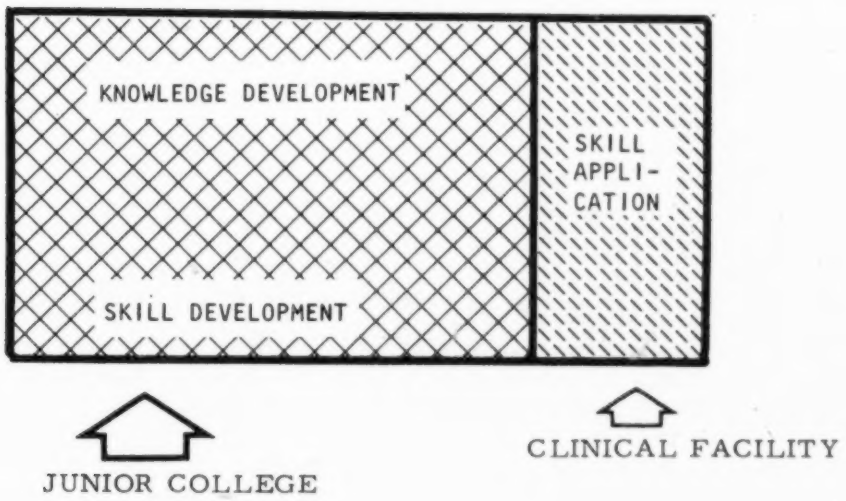
Mycology culture techniques - TL & CL

Note: TL - Teaching Lab, CL - Clinical Lab.

4. Suggested Emphasis on Activities

MEDICAL LABORATORY BLOCK VII

CLINICAL MICROBIOLOGY



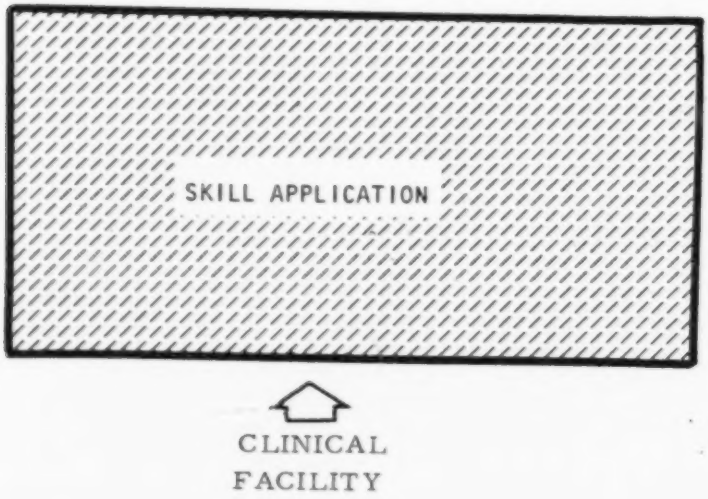
H. MEDICAL LABORATORY BLOCK VIII (Clinical Practicum)

This block consists entirely of clinical laboratory practicum and is suggested as a rotation through all departments of one or more clinical laboratories. This rotation is intended to serve as a renewal and reemphasis of learning experiences previously received by students in other blocks, and is therefore intended to be the final block in any student's educational program.

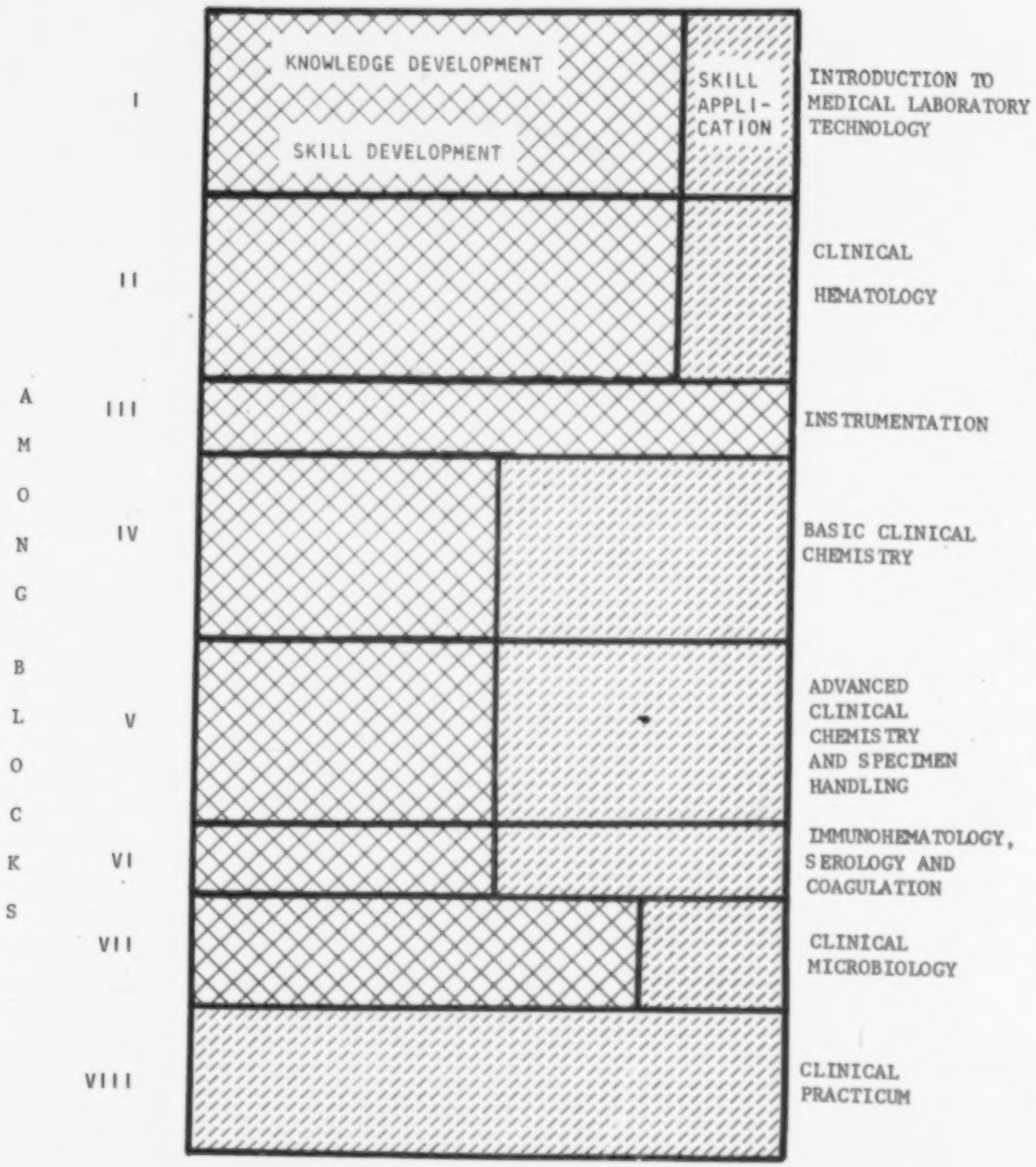
4. Suggested Emphasis on Activities

MEDICAL LABORATORY BLOCK VIII

CLINICAL PRACTICUM



A THROUGH H SUMMARIZED:
TOTAL EMPHASIS WITHIN AND AMONG BLOCKS



I. SUGGESTED COURSE OUTLINE PRE-CLINICAL MICROBIOLOGY (MLT 155)

LECTURES	LABORATORIES
Microbiology: definition and scope, historical perspectives, divisions of biology, biological classifications, classification of bacteria, the cell.	Introduction to laboratory, issue of supplies, the use of the microscope.
The bacterial cell, bacterial needs, symbiosis, antagonism.	Staining techniques, examination of buccal smears.
Biological activities of bacteria, tools of microbiology, methods of study, smears, cultures.	Examination of cultures from mouth.
Biochemical reactions, animal inoculation, specimen collection.	Study of prepared slides from cultures.
Micro-organisms and diseases; infection.	Study of cultures from wounds.
Immunity.	Blood grouping and typing.
Allergy.	Demonstration of anaphylaxis.
Sterilization: physical, chemical, antibiotics, disinfection.	Autoclave sterilization, scrubbing, use of spore strips and cultures.
Human pathogens.	Exam of staphylococcus and streptococcus cultures and smears.
Acid-fast bacilli, miscellaneous organisms.	Exam of stained AFB smears and AFB cultures.

Rickettsial and viral organisms and diseases.	Film on tissue culture and virology.
Medical mycology.	Exam of fungus smears and cultures.
Medical parasitology.	Exam of parasites.
Microbiology in daily life, bacteriology of food and water, immunizations.	Exam of milk/ice cream cultures.

RELATIONSHIP OF PROPOSED PROGRAM TO MURPHY'S LAW*

A. Greater than the average amount of advisement will be needed to assist students to make realistic decisions about course selections.

B. The preparation of proficiency and/or equivalency tests for challenging of a block or any part of it will add to the work load of the department faculty. There will also be an increase in the departmental work load if recycling of a student is necessary.

C. If a student demonstrates competency in a portion of a block, scheduling his activities for the remaining portion will become more complicated.

D. If a student successfully challenges an entire block it must be decided whether he will progress to another block or engage in an alternative activity.

E. If such progression is suggested the faculty will be confronted with the problem of teaching two or more blocks simultaneously. The same problem would arise if a student were immediately recycled through a block which he did not satisfactorily complete. Because of the excellent media center at Miami-Dade Junior College, it should be possible to make films, tapes, video tapes, etc., so that individualized instruction can be available for each block. Such material can and should be updated as needed.

F. As a general principle, more complicated blocks such as Advanced Clinical Chemistry should be scheduled late in the rotation. This may cause some scheduling problems in either the Junior College or clinical facilities.

*If anything can go wrong, it will.

EVALUATION

A community college is accountable to the community which supports it and each department of the college to the institution which grants it status. Such accountability must be demonstrated by a continuous program of evaluation to insure the college that the curriculum meets the aims of the college and the students are successful in attaining course objectives. The suggested evaluation of the Medical Laboratory Technology program could follow this general pattern:

A. GENERAL FACULTY INPUT

Knowledge objectives have been developed for the program. Evaluation should include a study of:

1. Attrition rate with causes if they can be determined.

2. Failure rate.

3. Teacher effectiveness in relation to "a" and "b".

4. Evidence of student attainment of objectives.

B. CLINICAL SUPERVISOR INPUT

The teaching supervisor in the clinical facility should evaluate student preparedness. If supervision of the student requires a percentage of fundamental instruction, the program in the junior college should be critically examined and suitable adjustments made. The coordinator in the teaching laboratory should work closely with the teaching supervisor of the clinical facility to make certain that the procedures are taught parallel with those used in the clinical facility.

C. STUDENT INPUT

1. Students should be consulted to determine if learning activities in the junior college are appropriate to those experienced in the clinical facility.

2. Follow-up after employment, when the graduate is asked to evaluate his:

   a. Readiness to perform expected activities at career entry.
   b. Progress and span of responsibilities.
   c. Progress in terms of promotion and salary increases.
   d. Desire for further educational goals.

D. EMPLOYMENT INPUT

If students attain performance objectives they should be successful in jobs assumed after graduation. Such success should be determined by a follow-up questionnaire to the employer at six months and one year. This should include questions concerning:

1. Ability to meet expectations of the employer.

2. Areas of strengths and weaknesses.

3. Suggestions for improvement of preparation.

E. COMMUNITY INPUT

Although a portion of the evaluation in this area appears in D, the community should be surveyed at appropriate intervals to determine if saturation of the job market has occurred or is likely to occur.

If either of these appears imminent, consideration should be given to possible limitations of enrollment.

F. UPPER DIVISION INPUT

Universities accepting graduates of Associate Degree programs should be contacted at appropriate intervals to evaluate preparation of the two-year student, determine needed changes in curricula and to provide continuous communication to insure adequate preparation of laboratory personnel.

Summative evaluation of each level of input should include some problem solving model. A suggested model (Corrigan & Kaufman) includes:

1. Identify problem.
2. Determine solution requirements and alternatives.
3. Select solution strategies and tools.
4. Implement.
5. Determine performance effectiveness.
6. Revise as required. This latter process occurs in all five steps.

An alternative might be the program evaluation review technique (PERT) which has recently been widely applied to educational programs. Implementation of a program of evaluation as outlined plus appropriate revision should effectively guarantee excellence in instruction.

SUMMARY

The committee has prepared a proposal for the Medical Laboratory Technology program at Miami-Dade Junior College. Its basic premises are:

1. Students will differ in motivation, academic ability and manual skills.
2. A flexible program is needed to make allowances for these differences.
3. An early introduction to the work and atmosphere of the clinical laboratories is necessary to enhance and maintain student interest and motivation.

The block or module concept, without the restriction of time, allows flexibility in:

1. Scheduling of the block.
2. Sequencing of instructional material within the block.
3. Increasing subject content over suggested minimum.
4. Recycling of students.

It is the opinion of the committee that the proposed program is consistent with the goals of a bold, progressive, forward-looking junior college such as Miami-Dade Junior College.

APPENDIX I

Selected Bibliography

It is suggested that these books be available as references for the students.

Allen, Fred H. and Diamond, L. K., Erythroblastosis Fetalis. Little Brown & Co. (Boston: 1958).

Bailey, W. Robert and Scott, Elvyn G., Diagnostic Microbiology. C. V. Mosby Co. (St. Louis, Missouri: 1970).

Bauer, J. P., et al, Bray's Clinical Laboratory Methods. C. V. Mosby Co. (St. Louis, Missouri: 1968).

Belding, D. L. and Brown, H. W., Basic Clinical Parasitology. Appleton - Century - Crofts Co. (New York: 1964).

Block, Matthew, Atlas of Hematology. Lea and Febiger (Philadelphia: 1968).

Davidsohn, Israel and Henry, John B., Clinical Diagnosis by Laboratory Methods. W. B. Saunders (Philadelphia: 1969).

Frankel, Sam, et al, Gradwohl's Clinical Laboratory Methods and Diagnosis. C. V. Mosby Co. (St. Louis, Missouri: 1970).

Hepler, Opal E., Manual of Clinical Laboratory Methods. C. C. Thomas (Springfield, Illinois: 1960).

Lee, Leslie W., Elementary Principles of Laboratory Instruments. C. V. Mosby Co. (St. Louis, Missouri: 1970).

Lippman, Richard W., Urine and The Urinary Sediment. C. C. Thomas (Springfield, Illinois: 1962).

Miale, John B., Laboratory Medicine: Hematology. C. V. Mosby Co. (St. Louis, Missouri: 1967).

Page, Lot B. and Culver, Perry J., Syllabus of Laboratory Examinations in Clinical Diagnosis. Harvard University Press (Boston: 1960).

Race, R. R. and Sanger, Ruth, Blood Groups In Man. Davis Co. (Santa Cruz, California: 1968).

Smith, Alice, Principles of Microbiology. C. V. Mosby Co. (St. Louis, Missouri: 1969).

Smith, David T., et al, Zinsser's Textbook of Microbiology. Appleton-Century-Crofts Co. (New York: 1968).

Wintrobe, Maxwell M., Clinical Hematology. Lea and Febiger (Philadelphia: 1967).

APPENDIX II

Information on Hospitals Utilized During Winter Term 1971 for Clinical Practicum

Hospital	Number of Beds	Admissions	Average Daily Census	Emergency Visits	Outpatient Visits	Laboratory Census*
Cedars of Lebanon	252	10,922	244	5,298	4,555	720,000
Doctors'	230	11,782	205	16,107		300,000
Hialeah	253	11,381	205	21,349		341,484
Mercy	315	12,551	278	6,278	6,497	240,000
Miami Heart Institute	165	4,045	147	484	7,673	365,067
Mt. Sinai	627	17,831	571	29,233	47,016	1,551,755
North Miami General	394	12,189	311	12,693		273,108
Pan American	145	4,148	79	5,657		80,000
St. Francis	256	5,841	165	8,423	2,238	374,742
South Miami	175	9,299	164	18,394		146,202
Variety Children's	160	6,082	105	17,639	8,488	119,501
TOTALS	2,972	106,071		141,555	76,467	

*Source: Telephone survey of institution March, 1971.